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Research and Development

EPA Site Analysis L.E. Carpenter & Company Wharton, New Jersey

EPA Region 2
and OERR

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Site Analysis
L.E. Carpenter & Co.
Wharton, New Jersey

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LAS VEGAS, NEVADA 89193-3478

NOTICE

This document has undergone a technical and quality control/assurance review and approval by personnel of the EPA/ORD Environmental Monitoring Systems Laboratory at Las Vegas (EMSL-LV), and is for internal Agency use and distribution only.

ABSTRACT

This report presents an analysis of aerial photography of the L. E. Carpenter and Company site, located in Wharton, New Jersey. The site was analyzed to assist the Environmental Protection Agency's (EPA) Region 2 in its assessment of potential sources of ground water, surface water, and soil contamination.

According to collateral information supplied by EPA Region 2, the site was used for iron mining and processing during the 1800's and early 1900's. Mine tailings and slag were reportedly disposed onsite. L.E. Carpenter and Co., a subsidiary of Dayco Corporation, manufactured vinyl wall coverings at the site from 1943 to 1987. Waste materials were disposed onsite in impoundments, starch drying beds, and drainage trenches. Buried drums and contaminated soil and water were encountered during onsite testing in the 1980's.

Findings which represent potential sources of contamination include impoundments, starch drying beds, numerous tanks, possible drums, pits, trenches, and standing liquid. No evidence of drum burial or contamination related to iron mining and processing was noted from the photography used in this analysis.

A wetlands and drainage analysis was performed for 1990.

The EPA's Environmental Photographic Interpretation Center in Warrenton, Virginia, a branch of the Advanced Monitoring Systems Division of the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, performed this analysis at the request of the Superfund Support Section of EPA Region 2 in New York, New York, and the Office of Emergency and Remedial Response in Washington, D.C. This analysis covers the period between 1940 and 1990, and the report was completed in December 1991.

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FIGURES

INTRODUCTION

An analysis of aerial photography was performed on the L.E. Carpenter and Company site, located in Wharton, New Jersey. The site comprises approximately 6.7 hectares (16.5 acres). The U.S. Environmental Protection Agency's (EPA) Region 2 requested this analysis in support of its assessment of potential ground water, surface water, and soil contamination sources.

Figure 1 shows the site location, keyed to a photocopy of a U.S. Geological Survey (USGS) 1:24,000-scale topographic map. Site boundaries or areas used in this analysis were determined from collateral data supplied by EPA Region 2 and do not necessarily denote legal property lines or ownership.

Aerial photography of the L.E. Carpenter and Co. site was obtained to represent the period from 1940 to 1990.[1] Black and white photography from 1940, 1951, 1957, 1963, 1966, February and November 1970, 1974, 1979, and 1990; and color infrared photography from 1983 were used for this analysis. Photography from 1940, 1963, November 1970, and 1974 was analyzed but not reproduced for this report due to the poor resolution of the photography and/or the lack of significant features, activities, and/or change. Any significant changes noted in those years will be annotated and discussed in the following year of photography reproduced in this report.

The site contained two iron mines and a forge during the 1800's and early 1900's, and mine tailings and slag were reportedly disposed onsite. L.E. Carpenter and Co., a subsidiary of Dayco Corporation, manufactured vinyl wall coverings at the site from 1943 to 1987. Waste materials were disposed onsite in impoundments, starch drying beds, and drainage trenches. During the 1980's, onsite ground water and soil testing revealed the presence of multiple pollutants. In addition, drums were encountered during the excavation of several "test pits" onsite.[2]

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[1]A complete listing of maps and photography used in this report is provided in the References section.

[2]Collateral information supplied by EPA Region 2. Hereafter, an asterisk (*) denotes collateral information.

FIGURE 1
L.E. CARPENTER & CO.

LOCATION MAP
DOVER, N.J. QUAD

APPROX. SCALE 1:24,000

Findings which are related to the L.E. Carpenter and Co. operations and represent potential sources of contamination include impoundments, starch drying beds, numerous tanks, possible drums, pits, trenches, and standing liquid. No evidence of drum burial or contamination related to iron mining and processing was noted from the photography used in this analysis. An impoundment, reported to have existed just east of a tank farm onsite from 1963 to 1970,* was not observed during that time. However, an impoundment was seen at the aforementioned location in 1974 and 1979.

A wetlands and drainage analysis was performed for 1990.

The EPA's Environmental Photographic Interpretation Center in Warrenton, Virginia, a branch of the Advanced Monitoring Systems Division of the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, performed this analysis at the request of the Superfund Support Section of EPA Region 2 in New York, New York, and the Office of Emergency and Remedial Response in Washington, D.C. This analysis covers the period from 1940 to 1990, and the report was completed in December 1991.

METHODOLOGY

A search of government and commercial sources was undertaken to obtain the best available aerial photography of the site spanning the desired time frame. The photography and other sources of information used in this report are listed in the References section.

The analysis was performed by viewing backlit transparencies of aerial photography through stereoscopes. Stereoscopic viewing creates a perceived three-dimensional effect which, when combined with viewing at various magnifications, enables the analyst to identify signatures associated with different features and environmental conditions. The term "signature" refers to a combination of visible characteristics (such as color, tone, shadow, texture, size, shape, pattern, and association) which permit a specific object or condition to be recognized on aerial photography.

The terms "possible" and "probable" are used to indicate the degree of certainty of signature identification. "Possible" is used when only a few characteristics are discernible or these characteristics are not unique to a signature. "Probable" is used when incrementally more characteristics are discernible. No qualifying terms are used when the characteristics of a signature allow for a definite feature identification.

Photographic prints were made from those years of aerial photographic coverage that reveal significant information about the site. The analyst's findings are annotated on overlays to prints and/or base maps and described in the accompanying text. Site boundaries or areas used in this analysis were determined from collateral data supplied by EPA Region 2 and do not necessarily denote legal property lines or ownership.

Due to factors inherent in the photographic printing process, prints do not exhibit the level of detail that is visible in the original aerial photography. Therefore, some features identified from the aerial photography may not be clearly discernible, or even visible, on the photographic prints presented in this report.

Color infrared film has been reproduced for the 1983 photography (Figure 8). Normal color film records reflected energy in the blue, green and red portions of the electromagnetic spectrum. Color infrared film differs in that it is sensitive not only to reflected blue, green, and red energy, but also to reflected energy in the infrared portions of the electromagnetic spectrum; however, the blue energy is filtered out and only the green, red, and infrared energy is recorded. When color infrared film is processed, it displays "false" colors that do not correspond with the true colors of the features photographed. For example, features that are highly reflective in the infrared portion of the spectrum, such as healthy green vegetation, appear red to magenta on color infrared film. The false color displayed by a feature is produced in accordance with the proportions of infrared, green, and red energy it reflects. These proportions are referred to as the feature's "spectral reflectance characteristics." To interpret the true color of a particular feature accurately from color infrared film, a knowledge of the spectral reflectance characteristics of that feature is required. This information is not readily available for the majority of features identified in this report. Therefore, unless otherwise indicated, no attempt is made to interpret the true colors of features identified on the color infrared film analyzed for this report.

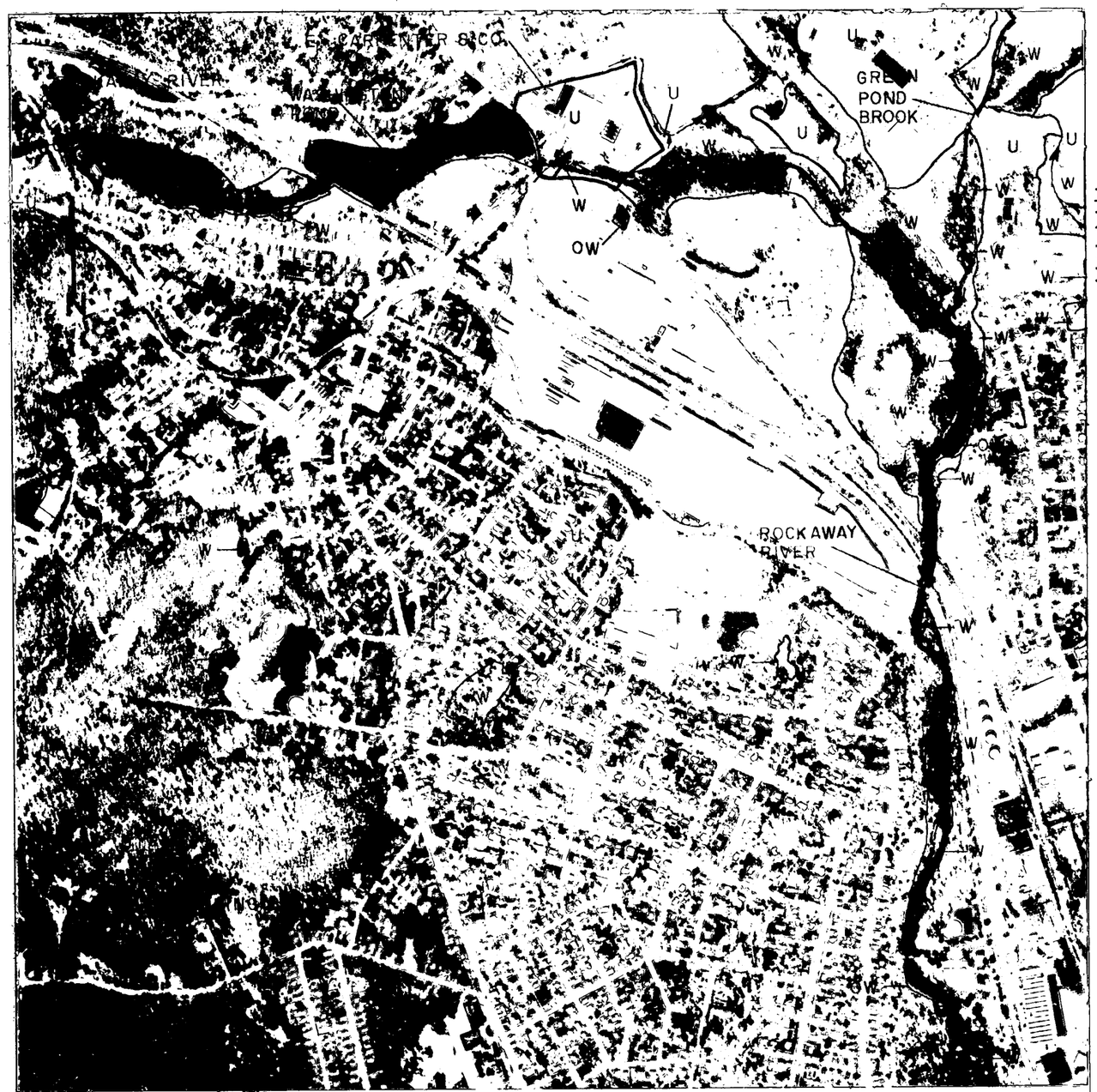
WETLANDS AND DRAINAGE ANALYSIS

APRIL 19, 1990 (FIGURE 2)

Wetlands (W), uplands (U), open water (OW), and drainage are delineated for the area on and around the L.E. Carpenter and Co. facility.

Washington Pond, located adjacent to the western edge of the site, is fed by the east-flowing Rockaway River. The Rockaway River leaves Washington Pond at a dam in the southwest corner of the site and continues to flow east into a large forested wetland. The river becomes braided just east of the site, then continues southeast through the forested wetland to the confluence of Green Pond Brook. From this point the river flows south into a long stretch of open water which extends south from the forested wetland. The river channel becomes braided south of the open water area before continuing south through another open water area.

Several small wetlands and Spring Brook are noted south of the site.



LEGEND

D - Drums
DG - Disturbed Ground
DK - Dark-Toned
DP - Discharge Point
FA - Fill Area
HT - Horizontal Tank
IM - Impoundment
LQ - Liquid
LT - Light-Toned
M - Material
OW - Open Water
ST - Stain
TR - Trench
U - Uplands
V - Vertical Tanks
W - Wetlands
- Access Road
- Berm
- Channelized Drainage
- Channelized Drainage (Indeterminate Flow Direction)
- Drainage
- Feature Boundary
- Fill Face
- Site Boundary

FIGURE 2 WETLANDS & DRAINAGE
L.E. CARPENTER & CO. APRIL 19, 1990 APPROX. SCALE 1:9,200

AERIAL PHOTO SITE ANALYSIS

APRIL 23, 1951 (FIGURE 3)

NOTE: Horizontal (HT) and vertical tanks (VT) are seen onsite throughout the period of analysis. Tanks will be annotated; however, they are not discussed unless associated with a significant observation (e.g., leaking, poor condition). Drainage is annotated throughout the period of analysis but is not discussed unless significant change has occurred.

Discharge Point (DP/LQ 1940, 1951) - Non-contact cooling water discharge point.* This pool of liquid is seen throughout the period of analysis and probably consists of water from the onsite manufacturing process. This pool of liquid will continue to be annotated, but is not further discussed.

Pits (1940) - Two of these are possible pits; all four appear to have been filled by 1951.

Possible Impoundment (IM 1940, 1951) - Appeared to be a rectangular structure in 1940, possibly bermed along its perimeter. In 1951 the rectangular shape is still visible.

FIGURE 3
L.E. CARPENTER & CO. APRIL 23, 1951 APPROX. SCALE 1:2,000

MAY 7, 1957 (FIGURE 4)

Liquid - Two new pools of liquid are seen east of the site. These two pools will continue to be annotated, but are not discussed further.

Disturbed Ground (DG) - Two areas of disturbed ground are seen. An access road connects the disturbed ground in the northern portion of the site to that located north of the study area. These features may be associated with burial, possibly a sewer or water line.

Light-Toned (LT) Material (M) - Located in the northeastern portion of the site, and may be related to waste disposal. This light-toned material will continue to be annotated, but is not discussed unless associated with a significant observation.

Fill Area 1 (FA1) - This area was filled sometime after 1951.

Possible Stain (ST) - Dark-toned possible stain appears to originate from the east side of a large building. This possible stain extends south from the building.

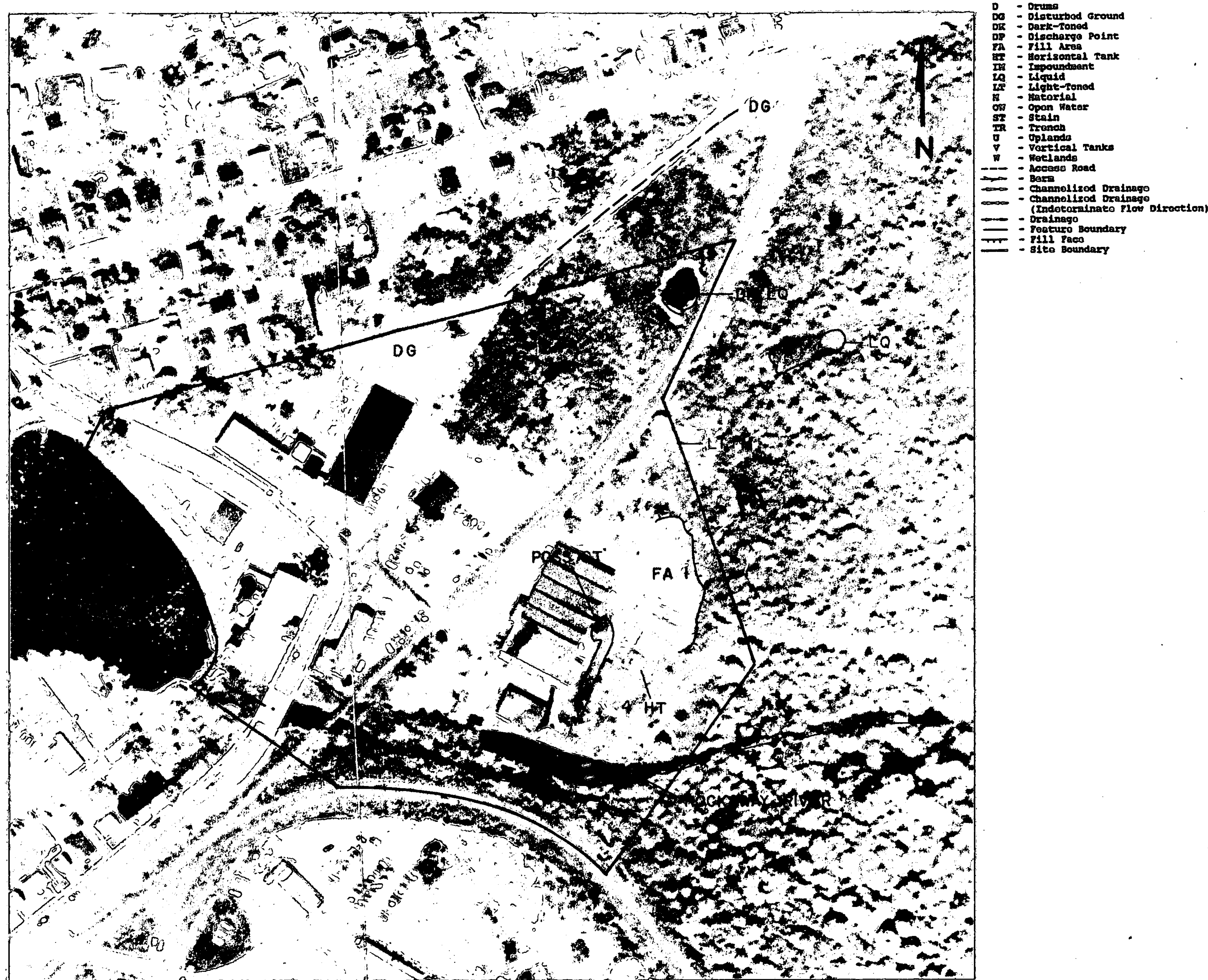


FIGURE 4
L.E. CARPENTER & CO. MAY 7, 1957 APPROX. SCALE 1:1,900

MAY 11, 1966 (FIGURE 5)

Drainage - A network of channelized drainage has been constructed northeast of the site. The channelized drainage, probably used to drain a wetlands area, discharges to the Rockaway River southeast of the site.

Disturbed Ground - The northern, offsite disturbed area and the dirt access road (not annotated) seen in 1957 have revegetated. The onsite disturbed area (not annotated) seen in 1957 is now covered by a parking lot.

Trench Filled with Liquid (TR/LQ 1963) - No longer seen; probably part of drainage channel network.

Dark-Toned (DK) Material - Seen along the base of FA1. May be related to disposal.

FA1 (1963, 1966) - Has been expanded steadily eastward since 1957.

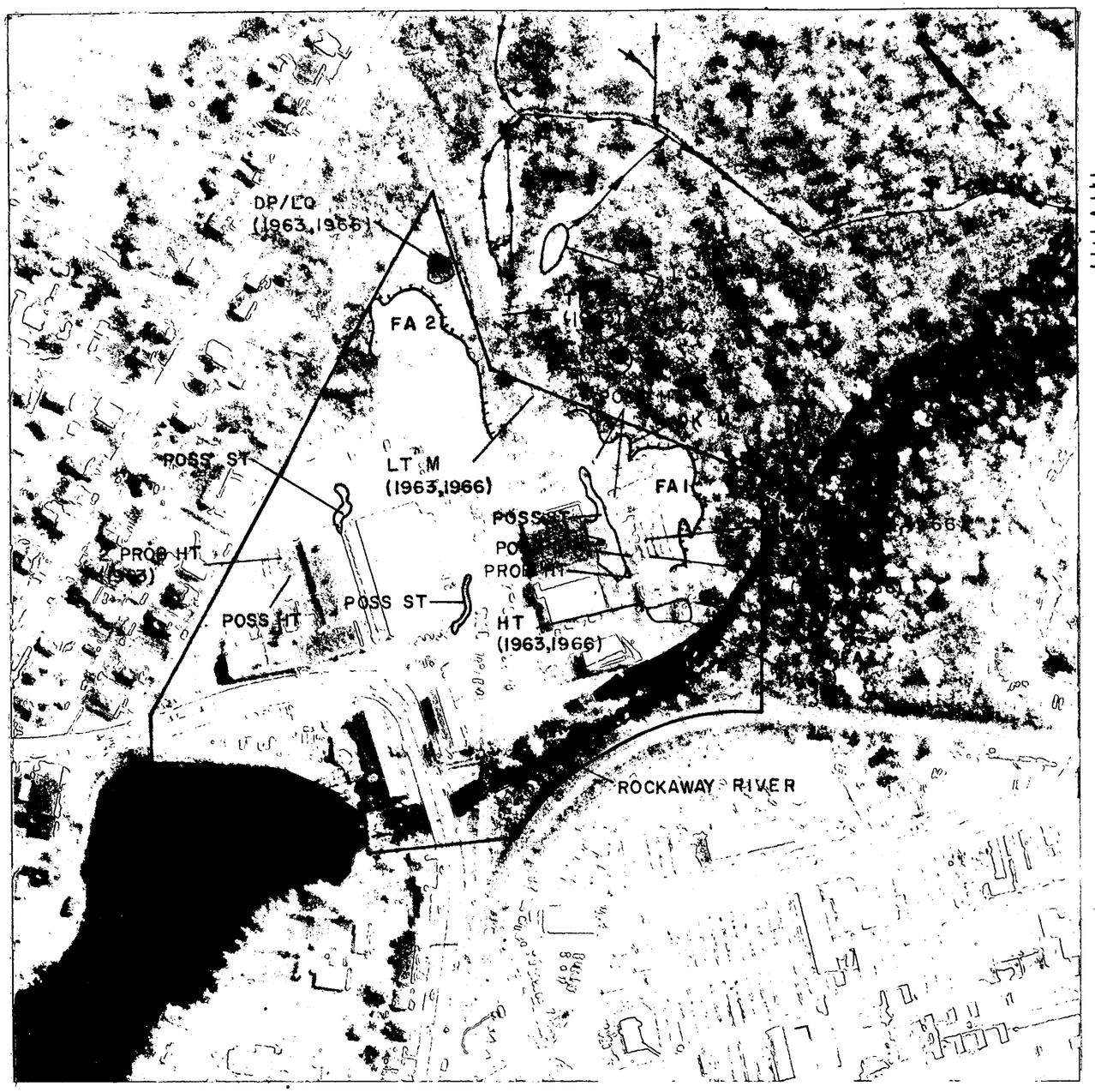
FA2 - This previously wet area was filled sometime after 1963.

Possible Stains - These dark-toned possible stains are visible in the central and eastern portions of the site. The easternmost stain is present where a dark-toned possible stain was seen in 1957.

Possible Drums (D) - Approximately 10 possible drums are seen adjacent to several horizontal tanks in the eastern portion of the site.

Light-Toned Material - Located in the southeastern portion of the site; may be related to waste disposal.

Dark-Toned Area (1963) - A rectangular dark-toned area was noted in 1963 in the same general location as a possible impoundment seen in 1951.



LEGEND

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- Access Road
- Berm
- Channelized Drainage
- Channelized Drainage (Indeterminate Flow Direction)
- Drainage
- Feature Boundary
- Fill Face
- Site Boundary

FIGURE 5
L.E. CARPENTER & CO. MAY 11, 1966 APPROX. SCALE 1:2,300

FEBRUARY 24, 1970 (FIGURE 6)

NOTE: Several of the features mentioned in 1966 are no longer seen due to the construction of the Air Products and Chemicals, Inc. facility just northeast of the site.

FA1 - Has been expanded north and east. It is bordered to the north by channelized drainage along the site boundary.

FA2 - Has been expanded farther north. The fill material seen along the fill face is coarse-textured and may be debris.

Trench - An L-shaped trench in the northern portion of the site may be related to drainage.

Possible Stain - A dark-toned possible stain seen in the southeast corner of the site may originate from the same building as two possible stains seen in 1957 and 1966.

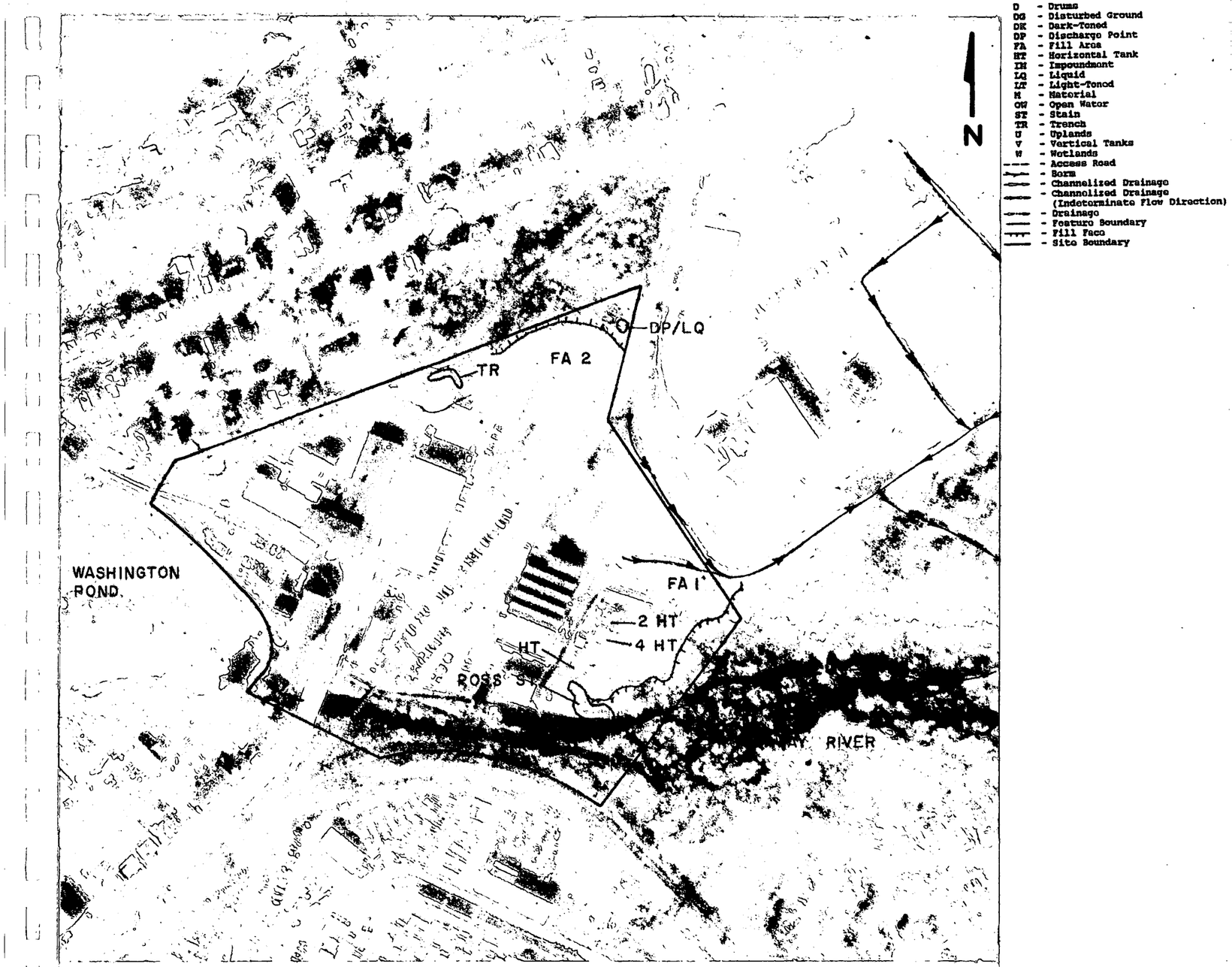


FIGURE 6
L.E. CARPENTER & CO. FEBRUARY 24, 1970 APPROX. SCALE 1:2,200

JULY 7, 1979 (FIGURE 7)

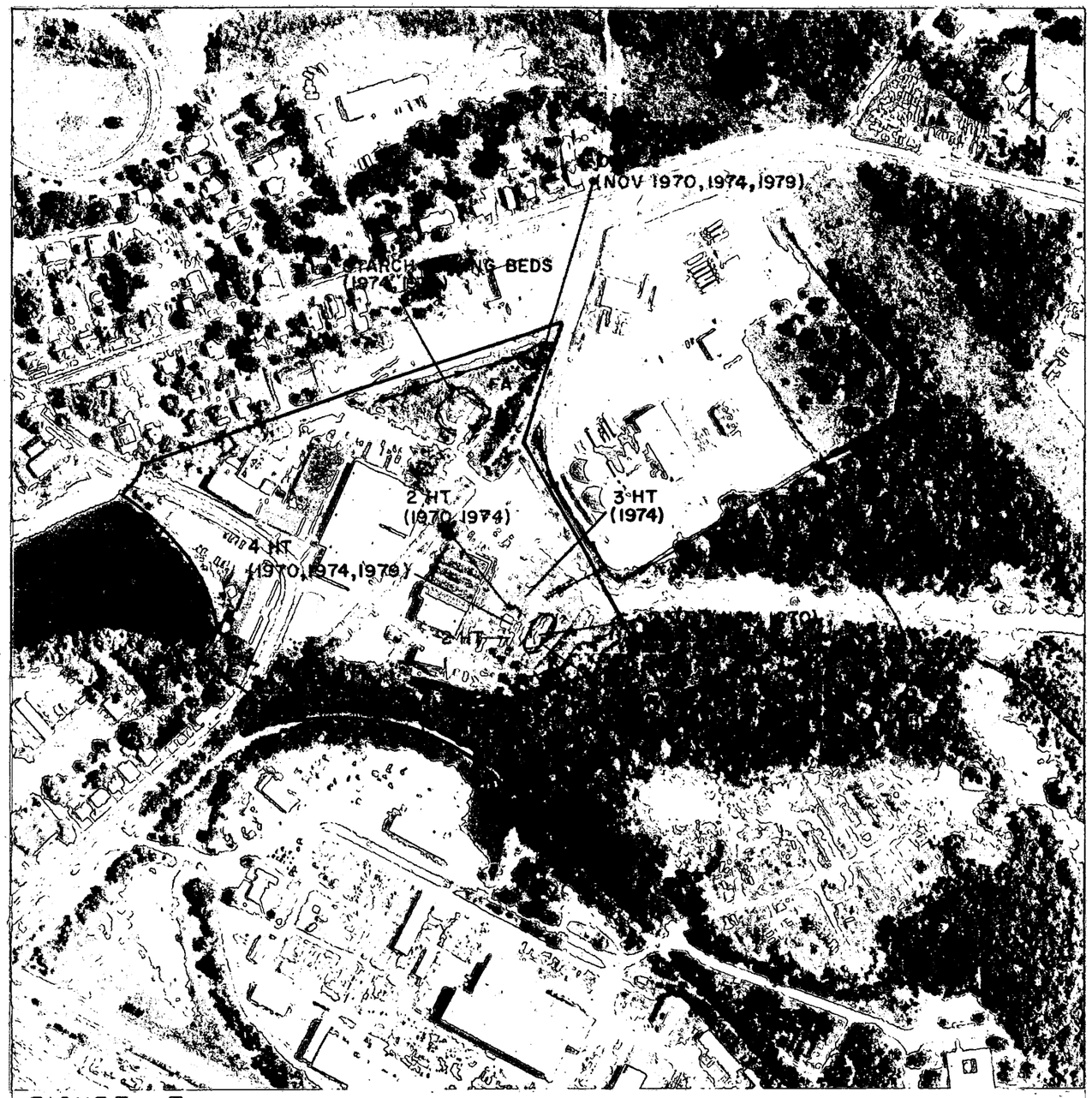
Starch Drying Beds* - The beds are bermed on four sides and built on top of FA2. They are used for the biodegradation of water-soluble starches. Three parallel rows of linear objects (not annotated) are visible inside the berm of the drying beds. One row of linear objects (not annotated) is seen outside the north berm.

FA1 - Has been expanded slightly east. NOTE: The light-toned, linear ground scar extending east from FA1 is probably related to sewer line construction.*

FA2 - Has revegetated. Will continue to be annotated, but is no longer discussed.

Impoundment (IM 1974, 1979) - Rectangular, surrounded by a berm on four sides. Two long, parallel trenches were seen at this location in November 1970. These trenches are probably related to the construction of the impoundment. NOTE: An impoundment is reported to have existed at this location from 1963 to 1970.* However, no impoundment was detected in this area until 1974.

Trench - Located just east of the impoundment.



LEGEND

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- W - Wetlands
- Access Road
- Berm
- Channelized Drainage
- Channelized Drainage (Indeterminate Flow Direction)
- Drainage
- Feature Boundary
- Fill Face
- Site Boundary

FIGURE 7
L.E CARPENTER & CO. JULY 7, 1979 APPROX. SCALE 1:2,900

JUNE 23, 1983 (FIGURE 8)

Starch Drying Beds - No longer present.

FA1 - Has been expanded slightly southeast.

Probable Liquid - Located along the east side of a building in the eastern portion of the site. This is the same general location where possible stains were seen in 1957 and 1966.

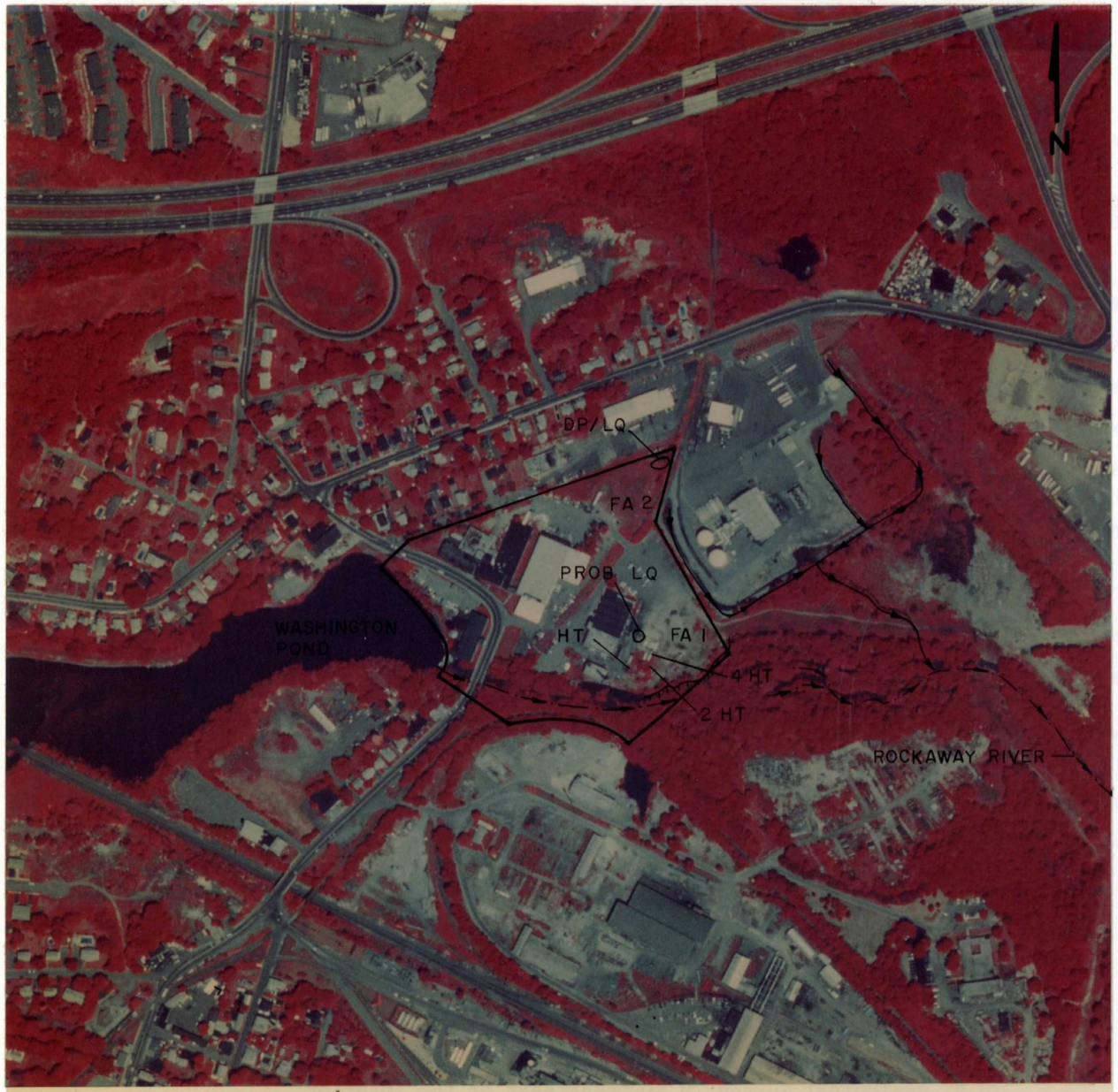

FIGURE 8
L.E. CARPENTER & CO. JUNE 23, 1983 APPROX. SCALE 1:4,600

REFERENCES

AERIAL PHOTOGRAPHY

Date	Agency	Mission Code	Agency Frame #	Orig. Scale	EPIC Frame #
December 19, 1940	TXAERO[1]	---	33:25-27, 81-83	1:20,000	8600,8601, 14505,14515-14517
April 23, 1951	TXAERO	---	289:4515-4517,4296-4299	1:20,000	8598,8599, 34715-34719
May 7, 1957	ASCS[2]	EAR	4R:204,205	1:20,000	14286:28,29
May 5, 1963	ASCS	EAR	2DD:60-62	1:20,000	14286:17-19
May 11, 1966	TXAERO	1580	4:79-81	1:24,000	8596,8597, 34714
February 24, 1970	USGS[3]	VCLD	2:139,140, 160-163,178-180	1:20,000	14246,14247, 8538-8541, 14181,14182, 14186
November 6, 1970	ASCS	EAR	2LL:51-53	1:40,000	8795:58-60
March 15, 1974	ROBASI[4]	2063	30:3112-3115	1:12,000	8594,8595, 14482,14483
July 7, 1979	ASCS	34027	178:56,57, 67,68	1:40,000	14286:7,8,11, 12
June 23, 1983	USFS[5]	83/043	191,192	1:32,500	83/043:191,192
April 19, 1990	ROBASI	MC	1:220,221; 2:14,15	1:16,000	34549,34550, 34601,34602

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[1]Aero Service Division, Western Geophysical Co., Houston, TX

[2]Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture

[3]U.S. Geological Survey, U.S. Department of the Interior

[4]Robinson Aerial Surveys, Inc., Newton, N.J.

[5]U.S. Forest Service, U.S. Department of the Interior

REFERENCES

MAPS

Source	Name	Scale	Date
USGS	Dover, N.J.	1:24,000	1981
NWI[1]	Dover, N.J.	1:24,000	Based on 1974 aerial photography

PUBLICATIONS

Eby, C.F., L.L. Seglin, and R.A. Shook. 1976. Soil Survey of Morris County, New Jersey. U.S. Department of Agriculture, Soil Conservation Service.

Hydric Soils of the United States. 1987. U.S. Department of Agriculture, Soil Conservation Service.

[1]National Wetlands Inventory, U.S. Fish and Wildlife Service, U. S. Department of the Interior